

CLAIMS:

Sub A47

1. A method for identifying a phase of an incoming UWB signal at a UWB receiver, comprising the steps of:

receiving incoming pulses of the incoming UWB signal, adjacent pulses of said incoming pulses arriving at a predetermined interval;

generating local pulses at the UWB receiver;

correlating the local pulses with the incoming pulses to produce a correlation function; and

determining a maximum of the correlation function.

2. A method of claim 1, wherein the predetermined interval is the time between the incoming pulses.

3. A method of claim 1, wherein the incoming pulses are at least one of bi-phase modulated, and quadrature phase modulated.

4. A method of claim 3, wherein the incoming pulses are multilevel pulses.

5. A method of claim 1, wherein the step of correlating the incoming pulses with the local pulses to produce a correlation function comprises:

shifting a phase of the local pulses; and

calculating a correlation value of the local pulses and the incoming pulses.

6. A method of claim 5, wherein the correlation value comprises the correlation function.

7. A method of claim 1, wherein the step of determining a maximum of the correlation function comprises:

finding a first maximum;

analyzing the correlation function to find a second maximum that exceeds the first maximum; and

searching a region around the second maximum to determine if the second maximum is a true maximum.

8. A system for identifying a phase of an incoming UWB signal at a UWB receiver, comprising:

an antenna configured to receive incoming pulses of the UWB signal, adjacent pulses of said incoming pulses occurring at a predetermined interval;

a signal generator configured to generate local pulses;

a correlator configured to correlate the incoming pulses with the local pulses to produce a correlation function; and

a detector configured to determine a maximum of the correlation function.

9. A system of claim 8, wherein the predetermined interval is a distance between the incoming pulses in time.

10. A system of claim 8, wherein the incoming pulses are at least one of bi-phase modulated, and quadrature phase modulated.

11. A system of claim 10, wherein the incoming pulses are multilevel pulses..

12. A system of claim 8, wherein the correlator comprises:

a phase adjuster configured to adjust a phase of the local pulses; and

a calculator configured to calculate a correlation value of the local pulse and the incoming pulse.

13. A system of claim 12, wherein a plurality of the correlation value comprises the correlation function.

14. A system of claim 8, wherein the detector comprises:

a location mechanism configured to find a first peak;

a correlation analysis mechanism configured to analyze the correlation function in order to find a second maximum to exceed the first maximum; and

